Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended): A method of fourth-order, blind identification of two sources in a system including a number of sources P and a number N of reception sensors receiving [[the]] observations, the sources having different tri-spectra, comprising the following steps:

   a) fourth-order whitening of the observations received on the reception sensors in order to orthonormalize the direction vectors of the sources in [[the]] matrices of quadricovariance of the observations used,

   b) joint diagonalizing of several whitened matrices of quadricovariance to identify the spatial signatures of the sources.

2. (currently amended): The method according to claim 1, wherein the observations used correspond to [[the]] time-domain averaged matrices of quadricovariance defined by:

$$Q_x(\tau_1,\tau_2,\tau_3) = \sum_{p=1}^{P} c_p(\tau_1,\tau_2,\tau_3)\,(a_p\otimes a_p{}^*)\,(a_p\otimes a_p{}^*)^H \qquad (4a)$$

$$= A_Q\,C_s(\tau_1,\tau_2,\tau_3)\,A_Q{}^H \qquad (4b)$$

where A_Q is a matrix with a dimension $(N^2 \text{x } P)$ defined by $A_Q = [(\boldsymbol{\alpha}_1\otimes\boldsymbol{\alpha}_1{}^*), \ldots, (\boldsymbol{\alpha}_p\otimes\boldsymbol{\alpha}_p{}^*)]$, $C_s(\tau_1,\tau_2,\tau_3)$ is a diagonal matrix with a dimension $(P \text{ x } P)$ defined by $C_s(\tau_1,\tau_2,\tau_3) = \text{diag}[c_1(\tau_1,\tau_2,\tau_3),\ldots, c_p(\tau_1,\tau_2,\tau_3)]$ and $c_p(\tau_1,\tau_2,\tau_3)$ is defined by:

$$c_p(\tau_1,\tau_2,\tau_3) = <\text{Cum}(s_p(t),\, s_p(t-\tau_1)^*,\, s_p(t-\tau_2)^*,\, s_p(t-\tau_3))> \qquad (5)$$

3. (previously presented): The method according to claim 2, comprising the following steps:

Step 1: estimating, through $Q_x^{\wedge}$, of the matrix Q_x, from the L observations $x(lT_e)$ using a non-skewed and asymptotically consistent estimator.

Step 2: eigen-element decomposition of $Q_x^{\wedge}$, the estimation of the number of sources P and the

limiting of the eigen-element decomposition to the P main components:

$Q\hat{;}_x \approx E\hat{;}_x \; \Lambda\hat{;}_x \; E\hat{;}_x^H$, where $\Lambda\hat{;}_x$ is the diagonal matrix containing the P eigenvalues with the highest modulus and $E\hat{;}_x$ is the matrix containing the associated eigenvectors.

Step 3: building of the whitening matrix: $T\hat{;}^ = (\Lambda\hat{;}_x)^{-1/2} \; E\hat{;}_x^H$.

Step 4: selecting K triplets of delays $(\tau_1^k, \tau_2^k, \tau_3^k)$ where $|\tau_1^k| + |\tau_2^k| + |\tau_3^k| \neq 0$.

Step 5: estimating , through $Q\hat{;}_x(\tau_1^k, \tau_2^k, \tau_3^k)$, of the K matrices $Q_X(\tau_1^k, \tau_2^k, \tau_3^k)$.

Step 6: computing of the matrices $T\hat{;}^ \; Q\hat{;}_x(\tau_1^k, \tau_2^k, \tau_3^k) \; T\hat{;}^H$ and the estimation, by $U\hat{;}_{sol}$, of the unitary matrix U_{sol} by the joint diagonalizing of the K matrices $T\hat{;}^ \; Q\hat{;}_x(\tau_1^k, \tau_2^k, \tau_3^k) \; T\hat{;}^H$

Step 7: computing $T\hat{;}^ {}^\# U\hat{;}_{sol} = [\boldsymbol{b}\hat{;}_1 \dots \boldsymbol{b}\hat{;}_P]$ and the building of the matrices $B\hat{;}_l$ sized $(N \times N)$.

Step 8: estimating , through $a\hat{;}_P$, of the signatures a_q $(1 \leq q \leq P)$ of the P sources in applying a decomposition into elements on each matrix $B\hat{;}_L$

4. (currently amended): The method according to claim 1, comprising evaluating quality of [[the]] identification of the associated direction vector in using a criterion:

$$D(A, \hat{A}) = (\alpha_1, \alpha_2, \dots.., \alpha_P) \tag{16}$$

where

$$\alpha_p = \min_{1 \leq i \leq P} [d(\boldsymbol{a}_P, \hat{\boldsymbol{a}}_i)] \tag{17}$$

and where $d(\boldsymbol{u}, \boldsymbol{v})$ is the pseudo-distance between the vectors $\boldsymbol{u}$ and $\boldsymbol{v}$, such that:

$$d(\boldsymbol{u}, \boldsymbol{v}) = 1 - \frac{|\boldsymbol{u}^H \boldsymbol{v}|^2}{(\boldsymbol{u}^H \boldsymbol{u})(\boldsymbol{v}^H \boldsymbol{v})} \tag{18}$$

5. (previously presented): The method according to claim 1, a fourth-order cyclical after the step a) of fourth-order whitening.

6. (previously presented): The method according to claim 5, wherein the identification step is performed in using fourth-order statistics.

7. (previously presented): The method according to claim 1 wherein the number of sources P is greater than or equal to the number of sensors.

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8. (previously presented): The method according to claim 1, comprising goniometry using the identified signature of the sources.

9. (previously presented): The method according to claim 1, comprising spatial filtering after the identified signature of the sources.

10. (previously presented): The use of the method according to claim 1, for use in a communications network.

11. (currently amended): The method according to claim 2, comprising evaluating quality of [[the]] identification of the associated direction vector in using a criterion

$$D(A, \hat{A}) \ = \ (\alpha_1, \alpha_2, \ldots , \alpha_P)$$

where

$$\alpha_p \ = \ \min_{1 \le i \le P} [d(\boldsymbol{\alpha}_p, \hat{\boldsymbol{a}}_i)]$$

and where $d(\boldsymbol{u}, \boldsymbol{v})$ is the pseudo-distance between the vectors $\boldsymbol{u}$ and $\boldsymbol{v}$, such that:

$$d(\boldsymbol{u}, \boldsymbol{v}) \ = \ 1 \ - \ \frac{\left| \boldsymbol{u}^H \boldsymbol{v} \right|^2}{\left(\boldsymbol{u}^H \boldsymbol{u} \right)\left(\boldsymbol{v}^H \boldsymbol{v} \right)}$$

12. (currently amended): The method according to claim 3, comprising evaluating quality of [[the]] identification of the associated direction vector in using a criterion

$$D(A, \hat{A}) \ = \ (\alpha_1, \alpha_2, \ldots , \alpha_P)$$

where

$$\alpha_p \ = \ \min_{1 \le i \le P} [d(\boldsymbol{\alpha}_p, \hat{\boldsymbol{a}}_i)]$$

and where $d(\boldsymbol{u}, \boldsymbol{v})$ is the pseudo-distance between the vectors $\boldsymbol{u}$ and $\boldsymbol{v}$, such that:

$$d(\boldsymbol{u}, \boldsymbol{v}) \ = \ 1 \ - \ \frac{\left| \boldsymbol{u}^H \boldsymbol{v} \right|^2}{\left(\boldsymbol{u}^H \boldsymbol{u} \right)\left(\boldsymbol{v}^H \boldsymbol{v} \right)}$$

13. (previously presented): The method according to claim 2, a fourth-order cyclical after the step a) of fourth-order whitening.

14. **(previously presented):** The method according to claim 2, wherein the identification step is performed in using fourth-order statistics.

15. (previously presented): The method according to claim 2, wherein the number of sources P is greater than or equal to the number of sensors.

16. (previously presented): The method according to claim 2, comprising goniometry using the identified signature of the sources.

17. (previously presented): The method according to claim 3, a fourth-order cyclical after the step a) of fourth-order whitening.

18. **(previously presented):** The method according to claim 3, wherein the identification step is performed in using fourth-order statistics.

19. (previously presented): The method according to claim 3, wherein the number of sources P is greater than or equal to the number of sensors.

20. (previously presented): The method according to claim 3, comprising goniometry using the identified signature of the sources.